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ABSTRACT

What are research-based, pedagogically sound ways to use Web-packaged courseware to impact student learning? This paper deals with these issues, and provides seven different, pedagogically sound ways to use such software in support of higher education. The paper first outlines several features that are common to most courseware products: one-stop access to resources and telecommunications; learning space for individual control of learning; non-linear learning experiences; hyperlinks to vary depth of exploration in real-time and asynchronous sharing of reflective learning; and instructor productivity tools. The model courseware package detailed in this paper is BlackBoard. Each of these seven approaches to BlackBoard development and deployment briefly discussed: management, resources, communication, student engagement, collaboration, knowledge management, and assessment. Tips for courseware developers are provided. (Contains 23 references.) (AEF)

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Seven Ways to BlackBoard

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Abstract:

What are research-based, pedagogically sound ways to use Web-packaged courseware to impact student learning? This paper deals with those issues, and provides seven different, pedagogical sound ways to use such software in support of higher education.

Increasingly, institutions of higher education are incorporating online Web-packaged courseware as part of their educational delivery system. A number of instructional dilemmas have been confronted in institutes of higher education lately. How can instruction be conducted effectively, particularly with the other demands that face today's students? As the baby boomlet hits eighteen years old, how will campuses provide enough seating for the rising population? How can students learn research and production skills that can be applied to a variety of careers? How will academia prepare students to be successful in an environment where 85% of jobs will involve technology? Standardized online instruction is one solution; it enables teacher preparation faculty to optimize class time, and it ensures consistency across course sections.

This method facilitates distance learning as well as offers increased interaction – potentially. Students can "learn anytime, anywhere." Online-enhanced instruction can "collapse" time and space. However, care must be taken to make good use of its features in designing and implementing courses. The

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vast majority of faculty are not experts in HTML coding or its equivalent. Pedagogically, most faculty do not have training in technology-based instructional design, and many have not even experienced rigorous online instruction, they sometimes find it hard to develop pedagogically sound Web-related courseware.

Instruction itself necessitates additional decisions about several elements: content, resources, sequencing, pacing, choice of format (e.g., video, Internet, face-to-face), instructional aids (e.g., guidesheets, multimedia presentation, charts, etc.) Indeed, too often technology is added on top of existing instruction, like icing on the cake, rather than *transforming* instructional design. Some of the changed elements include: the locus of control form teacher to learner, just-tin-time learning, emphasis on resource-rich inquiry, and heightened interaction. Each type of technology has its own specialized characteristics, so matching tool with instruction and learning becomes a more complex decision. Additionally, the comfort level of both instructor and learner must be taken into account more than ever in terms of the technoogo9y tools to be used.

Not surprisingly, online instructional packaging business has increased dramatically in correlation to the drive for distributed education. Generally, faculty gravitate towards Web pages or courseware, depending on their prior experience and needs. Technology "early adopters" generally started delivering course content or links through direct Web page construction. Typically, they uploaded their syllabus and provided links to selected readings. A separate listserv usually served as a means for class discussion. However, since "boilerplate" courseware options have developed, most faculty have migrated to that environment so they can concentrate on developing content rather than spending valuable time scripting or developing the structure for instruction.

Several features are common to most courseware products.

One-stop access to resources and telecommunications. Students can access resources, communicate with peers and their instructor, take quizzes, post their work, and check on their grades.

Learning space for individual control of learning. A variety of resources are available online: documents and links provide by both instructor and students. Students can also determine the depth of exploration: whether to stop at the first Web site, for instance, or follow the myriad of links from site to site. A certain latitude in access timing and pacing does depend on the instructor's parameters since s/he determines the documents' availability.

Non-linear learning experiences that respond to student's immediate needs. While the instructor usually sequences resources or sessions, students can access these materials upon need – when it is accessible. One of the main strengths of the Web is its random-access capability. While an instructor could possible build a strictly linear learning model, it would be difficult within the courseware structure, and actually self-defeating. Where concepts *are* built upon one another, usually such learning occurs between sessions. The instructor in this case would upload one lesson at a time. However, *within* each lesson, students can choose from variety of related documents, and can determine to what depth that material needs to be consulted.

Hyperlinks to vary depth of exploration real-time and asynchronous sharing of reflective learning. With the incorporation of hyperlinks, a document transcends the two-dimensional framework to achieve 3D mentality. Dialogue boxes can serve as "just-in-time" glossaries of terms. A detail within a document can be linked to related research, commentary on the text, visuals to clarify concepts, or even video clips. Those links may be generated by the document creator, the instructor, or by the students. If done by the instructor, the links serve as complementary teaching/learning tools; if contributed by students, the links provide opportunities for personal meaning-making and shared learning. In any case, the student determines which links to explore – and to what depth. Thus, they gain control and responsibility for their education.

Instructor productivity tools. One of the first uses of courseware by instructors is for class management: of documents, communication, students, and grades. Instructors typically begin developing their course package by poster their syllabus and assignments. Either ahead of time or in response to class discussion, instructors then upload appropriate readings (making sure that copyright is in compliance) or create links to materials stored in other computer servers. Additionally, instructors post lecture notes that they either create in preparation for their class, or have students write to reflect class discussion. In either case, students benefit from having materials available for examination – and the instructor's need for photocopying is greatly decreased. Most instructional packages enable the instructor to email individuals, groups or the entire class. The teacher can also assign students to small collaborative groups to facilitate project development and foster interactive discussion. Grading modules usually calculate points, including weighted factors, and provide insightful statistics analyzing the student distribution of points. Moreover, students can access their grades at any point, so they can monitor their own progress easily.

The model courseware package detailed in this paper is Blackboard (http://www.blackboard.com), with its following features:

* announcements: timely, high-profile posting of information (announcements are also posted on the student's courseware desktop)

* course information: syllabus, introduction to the course, course guidelines and policies

* staff information: contact and personal information about the instructor and other instructional aides

* course documents: session agendas/objectives, class/lecture notes, readings, exemplars, surveys and quizzes

* assignments: directions for student work, including online activities

* communication: email, threaded discussion, real-time chat, group pages, student roster

* links: by the instructor or institution

* student tools: calendar, home page, assignment drop box, access to student's own grades

* resources: courseware manual and help.

Through BlackBoard's control panel, the instructor can determine which features to make available to students, and which items to track. In this area, the instructor can add, modify and remove items within the course package as well as determine when those items will be made available to students. This feature is particularly attractive if a teacher wants to provide an online quiz opportunity; the timeframe for access can be very finely defined. Additionally, the courseware enables the instructor to maintain statistics about student access to different features of the courseware: day of the week, time of the day, "hits" over a time period.

Generally, instructors use the course information, announcements and communication features first and then incorporate other features when they feel ready to enrich their course package – or want to respond to student needs and demands. The first benefit they tend to identify is paper control, then course organization and communication. The first *student learning* benefit usually identified is online discussion. (Farmer)

How instructors combine and apply these courseware elements shapes the course delivery. Farmer has identified seven approaches to BlackBoard development and deployment, which are based on research and best practice; they include: management, resources, communication, student engagement, collaboration, knowledge management, and assessment.

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Management. BlackBoard may be used as an effective management tool. Most instructors post their syllabus online at the beginning of BlackBoard. Office hours and contact information is easy for students to find. Class meetings and assignment deadlines are easily posted on the course calendar. Announcements are posted on the first "page" so students can find out about timely opportunities and changes. Students can access course readings via BlackBoard, as well as lecture notes. Assignments can be posted, and students can submit their work via the courseware drop-box. Thus, paperwork is kept to a minimum. The instructor can arrange students in groups to facilitate group discussion; one student acts as a reporter and posts the group's major findings. Groupings also facilitate collaborative assignments, particularly when students commute long-distance to a site – or take a course completely online. The instructor can also diagnose student knowledge by using Blackboard's test and survey module; results and averages are generated so the instructor can craft needed instruction based on student needs. The discussion groups and email features also provide quick and easy feedback – and other students can also offer give peer feedback in a timely manner. In terms of grades, the instructor can post grades quickly so each student can view his/her own progress confidentially. BlackBoard permits the instructor to define the access level of each feature within the courseware to optimize use and security.

Resources: Besides course syllabus and general information, BlackBoard's structure facilitates its use as a resource manager. The instructor –and students – can post readings, lecture notes, and presentation stacks. To increase learning, the instructor can provide student access to online tutorials, simulations and WebQuests. Not only can a document be posted, but hotlinks to online sources are possible with BlackBoard, which streamlines course content and insures compliance with copyright law. With the virtual classroom feature, students can contact online experts in real time. On a more mundane, but equally useful level, BlackBoard includes student and instructor courseware help.

Communication: BlackBoard offers a central telecommunications mechanism that can act in both a one-way and two-way delivery system. The upfront announcements facilitate timely changes. Instructors can email individuals, groups or the entire class. Discussion forums provide threaded discussion that the instructor can sort according to date, author or topic for easy analysis. Students can share documents via the real-time virtual classroom (i.e., textual and graphical chat) and within instructor-designated groups. Indeed, with the group feature, discussion remains closed to anyone outside the group – except for the instructor. With guest privileges, outside experts can communicate with the class synchronously or asynchronously. Students can communicate their own interests via their personal online home page within the course, and they can submit their work to the instructor via the drop-off box. It has been found the communication can increase with BlackBoard; students who might sit passively in the back row now become equal participants, and English learners have the time to think and find the right words to better demonstrate their own knowledge.

Student Engagement. With the variety of communications means as well as the modular design of BlackBoard, students can increase their engagement with resources, peers and their instructor. The act of using BlackBoard helps kinesthetic learners. Students appreciate the sense of an interactive and open-ended learning environment that is theirs to explore according to their own time and needs parameters. Online activities such as WebQuests and simulations foster interactivity and reflective learning. Discussion forums and virtual classroom expand communication opportunities, and also enable students to initiate their own threads. Students learn more about their peers through the personal home pages, and they work more easily with the group pages. Quizes and surveys help students self-assess their own progress, and they appreciate the faster feedback of online grading throughout the course period.

Collaboration. The communication and engagement approach certainly fosters collaboration. As already mentioned, threaded discussion forms, chats and grouped projects expand traditional means of collaborating. Tele-based experts offer a link between the classroom and the professional world. On a very real level, BlackBoard facilitates knowledge management as shared learning ramps up the class's own expertise.

Dynamic Course Building. Instead of a pre-determined and static course, BlackBoard-enhanced courses can be ongoing, responsive learning "journeys." Some of the means to develop and hone a course during the time period include:

- creating a database of student responses
- developing course topics and content based on diagnosis of student needs
- adding links and reading based on class action
- archiving student projects
- providing feedback on student work
- developing discussion forums based on student needs and wants.

Assessment. The following tools can be used as formative and summative assessment tools:

- surveys
- Quizes (with several options for response format)
- Discussion threads
- Gradebook
- BlackBoard usage statistics: by user, time date, content area.

BlackBoard and other similar courseware packages can be used by instructors at different levels of sophistication:

1) static repository of course information

2) productivity vehicle

3) communications medium

4) complement to class activity (i.e., remote online activities)

5) integration with class activity

6) class-develop-ed dynamic knowledge base

7) virtual course.

The biggest trend in the use of courseware is the development of hybrid courses: a combination of face-to-face and online instruction. In this model, students develop personal connections with their peers and optimize classtime for those activities that cannot be captured well in distance or online environments (e.g., role-play, sophisticated combinations of technology and presentation, cultural events). Online resources provide access to a world of knowledge at a time convenient to the student, and telecommunications fosters more equitable and in-depth reflection.

Regardless of the level of courseware use, the following tips for courseware developers help optimize courseware benefits:

- Explore the software's features and potential before full-scale course development.
- Clarify all instructions, assignments and feedback. Provide a mechanism, such a one discussion forum/space, for students to ask questions of clarification.

- Develop documents offline and upload content online.
- Test layout and content conversion; word processing documents in particular may lose some format details. To guarantee layout integrity, save the document in a .pdf format.
- Backup all work regularly.
- Train students how to navigate the courseware, and have veteran students coach their peers.
- Check for understanding: never assign a resource without requiring some kind of student action.
- Warn students if the site will be dynamic (i.e., will change).
- Distribute responsibility: have student take lecture notes, create study guides, report out from their group discussion, critique their peers' work, and contribute to the body of knowledge.

In the final analysis, courseware provides a technologically determined structure to organize course delivery and help students become more comfortable with instructional technology. By taking advantage of the medium, instructors can elevate and deepen student learning – and foster a true learning community.

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